

Serial No. 10/602,248  
Amendment dated December 12, 2006  
First Office Action dated September 12, 2006

### REMARKS/ARGUMENTS

Claims 7-26, and 28-30 are pending in the application. Claims 7, 12, and 19 were amended. No new matter has been added. Claims 7-26 and 28-30 are rejected under 35 U.S.C. 112, as being indefinite for failing to particularly point and distinctly claim the subject matter which applicant regards as the invention. Claims 23-25 are rejected under 35 U.S.C. 101 because the Office Action asserts that the claimed invention is directed to non-statutory subject matter. Claims 7, 18, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakita et al. Claims 7, 18, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doran. Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Kawakita et al. or Doran in view of Inagawa et al. Claims 12 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Stampler, Lerouge or Sato. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Stampler, Lerouge or Sato in view of Inagawa et al. Claims 9-11, 14-17 and 20-22 are objected to as being dependent upon a rejected base claim. Claim 23-25 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, and 35 U.S.C. 101. Claims 7, 12, 18, 23, and 25 are amended to bring the claims into better form and claim 19 is amended to correct claim dependency. The Abstract is amended as well.

First, Applicants would like to gratefully acknowledge the Office Action's indication that claims 9-11, 14-17 and 20-22 contain allowable subject matter. *See* Office Action dated 9/12/2006, paragraph 10.

Claims 7-26 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards

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as the invention. *See* Office Action dated 9/12/2006, paragraph 2. The Office Action states that independent claim 7 is “vague and indefinite” for failing to “recite the necessary detail [sic] physical structures to perform the recited function.” *See id.* The claim recites a “division stage including a set of result adding devices.” These structures would adequately enable one skilled in the art to create the apparatus as described in the example provided in Applicant’s figures 4 through 7 and the accompanying discussion starting at paragraph [0053].

The Office Action further notes that the phrase “that is more precise than its input value” is vague.” *See id.* Applicants submit the specification discloses, at least in paragraph [0054] and accompanying discussion regarding the division stage, that precision, as one skilled in the art would recognize, may be in reference to the accuracy of the significant digits of a number. Claim 23 is a method claim and not an apparatus or system claim. Claim 28 does point out several structures, including a processor, bus, graphics controller, and an apparatus comprising a division stage including a set of result adding devices and a display device. Claim 12 also discloses a structure of a “multiplication stage” including a plurality of ANDing devices. The structures of the multiplication stage include the ANDing devices as described in the specification beginning at paragraph [0042] and further shown in figures 4 through 7. Claims 7, 12, and 18 disclose modular structures of an apparatus that *comprise* a combined multiplication stage and a division stage. The specification would enable one of ordinary skill in the art to create the claimed apparatus.

The Office Action alleges claims 23-25 are directed to non-statutory subject matter under 35 U.S.C. § 101 as a method for performing a mathematical function. *See* Office Action dated 9/12/2006, paragraph 3. Claims 23 to 25 are directed to a method for multiplying a value, X, by

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a fraction,  $P$ , producing a result, where  $P$  is a non-zero, non-unitary fraction value with an odd number denominator. The specification clearly discloses that the method is performed by a hardware implementation. Applicant's specification discloses the implementation of the hardware structures to perform the method as claimed. See Specification, paragraphs [0031] to [0039] and the hardware implementation starting at paragraph [0040]. Therefore, the current rejection should be withdrawn.

The Office Action further rejects claims 7, 18, 28, and 30 under 35 U.S.C. § 103(a) as being unpatentable over Kawakita (4,334,285). Applicants submit the cited references do not teach or suggest at least "[an] apparatus for calculating an intermediate value said apparatus comprising: a division stage including a set of result adding devices, connected in series, each having an input and an output, each of said result adding devices generating an output value that is more precise than its input value, *wherein the final intermediate value is generated that is a value between a first value,  $X$ , and a second value,  $Y$ , as  $P * X + (1 - P) * Y$  where  $P$  is a non-zero, non-unitary fraction value with an odd number denominator (e.g., as described in claim 7).*

The Office Action states that Kawakita discloses "a plurality of serial adders (20-23)." See Office Action dated 9/12/2006, paragraph 5. However, the Office Action fails to cite to a section describing the relevant limitations described above. Indeed, Applicants submit Kawakita *does not* disclose a series of adding devices "each of said result adding devices generating an output value that is more precise than its input value, wherein the final intermediate value is generated that is a value between a first value,  $X$ , and a second value,  $Y$ , as  $P * X + (1 - P) * Y$  where  $P$  is a non-zero, non-unitary fraction value with an odd number denominator." Since at

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least this limitation is lacking from the Kawakita reference, Applicants submit the current rejection is lacking.

The Office Action further states it would have been obvious to a person having ordinary skill in the art to design the claimed invention according to Kawakita "because the plurality of serial adders can be used as the claimed 'division stage' as claimed." *See id.*

Applicants submit the Office Action applies hindsight reasoning and Applicant's disclosure as a map to provide an obviousness rejection. Because Kawakita does not disclose all the limitations of claim 7, Applicant respectfully submits the obviousness rejection should be withdrawn. Claims 18, 28, and 30 were rejected in the Office Action for similar reasons. For the reasons stated above for claim 7, claims 18, 28, and 30 are similarly traversed.

Claims 7, 18, 28, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Doran (4,503,512). *See* Office Action dated 9/12/2006, paragraph 6. Applicants submit the cited reference fails to describe at least the limitations discussed above.

The Office Action states that Doran discloses "the invention substantially as claimed, including a plurality of serial adders." *See id.* However, Doran is directed toward a cellular division circuit and does not disclose a series of adding devices "each of said result adding devices generating an output value that is more precise than its input value, wherein a final intermediate value is generated that is a value between a first value, X, and a second value, Y, as  $P \cdot X + (1-P) \cdot Y$  where P is a non-zero, non-unitary fraction value with an odd number denominator." (e.g., as described in claim 7) The Office Action states the reason to combine to create the serial adders is "because the plurality of serial adders can be used as the claimed 'division stage' as claimed." *See id.* The Office Action applies hindsight reasoning and

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Applicant's disclosure as a map to provide an obviousness rejection. Because Doran does not disclose all the limitations of claim 7, Applicant respectfully submits the obviousness rejection should be withdrawn. Claims 18, 28, and 30 were rejected in the Office Action for similar reasons. For the reasons stated above for claim 7, claims 18, 28, and 30 are similarly traversed.

Claims 12 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either Stampler (3,610,906), Lerouge (4,571,701), or Sato (4,598,362) in view of Inagawa. Applicants submit the cited references fail to describe at least the limitations discussed above.

The Office Action states that Inagawa discloses an apparatus having a "plurality ANDing devices and adder devices." Neither Inagawa, Stampler, Lerouge, or Sato disclose the limitation of claim 12 that states "*a combined multiplication stage including a plurality of ANDing devices, each having inputs to receive said value and a setting input to receive a bit signal from a binary representation based on a numerator of said fraction value multiplied by a constant, c, and an adder coupled to outputs of said ANDing devices*" (emphasis added). Lerouge is directed toward an integrated circuit multiplier structure, Stampler is directed toward a binary multiplication utilizing squaring techniques, and Inagawa is directed toward dividing the elements of a Galois field. None of the reference are directed towards determining an intermediate value at all. Because the cited references do not disclose all the limitations of claim 12 and no proper motivation to combine has been provided, Applicant respectfully submits the obviousness rejection should be withdrawn. For the reasons stated above for claim 12, claim 29 is similarly traversed.

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Applicants submit for at least the above reasons the independent claims 7, 12, 18, 23, 25, 28, 29 and 30 are currently allowable. Claims 8-11, 13-17, 19-22, and 24-26 are allowable for depending from allowable base claims.

**Conclusion**

The Applicant respectfully submits that this application is in condition for allowance. A Notice of Allowance is earnestly solicited.

The Examiner is invited to contact the undersigned attorney at the telephone number listed below to discuss any matter concerning this application.

The Office is hereby authorized to charge any fees, or credit any overpayments, to Deposit Account No. 11-0600.

Respectfully submitted,

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